

IV.—Notes on the Geology, &c. of the Country in the Neighbourhood of Maulamyeng (vulg. Moulmein). By Capt. W. FOLEY.

[Submitted at the meeting of the 6th May.]

The town of Maulamyeng is situated on the left bank of the Martaban river, the channel by which the *Than-lweng*, *Gyeng*, and *Attayen* discharge themselves into the sea. Properly speaking, Maulamyeng may be said to mark the junction of these three rivers, as the N. E. extremity of the town approaches to within a very short distance of the confluence of the *Attayen* with the *Gyeng* and *Than-lweng*; it would also be more in accordance with usage, if in the room of “*Martaban river*,” (the name by which it has been hitherto known to the British,) the designation of “*Than-lweng river*” was given to the channel above-mentioned; the *Than-lweng*, being the largest of the three rivers, is entitled to the pre-eminence of holding an uninterrupted course to the *Gulf of Martaban*.

Immediately opposite to Maulamyeng, and separated from it by the *Martaban river*, (in this place about $1\frac{1}{4}$ mile wide,) are the northern end of *Phullughewn Island* and the town of *Mowtumma*, backed by a bold and interesting chain of mountains; to the north are the *Than-lweng river* and *Joe-ka-beng* range of limestone; while on the eastern and southern sides, the town and cantonment of Maulamyeng are bounded by the *Attayen* river, and a long line of sandstone hills, a continuation of the *Mowtumma* chain, which, leaving a passage for the river, re-appears at the *Kyeit-san-lan Phya**, and is seen taking its course to the south to the right of *Gnang-dey* and *Gneedone*.

The general aspect of the country is mountainous, the mountains taking a N. N. W. and S. S. E. direction†. The most conspicuous of these, from its superior elevation, is the *Zingyet Thowng*, situated to the N. W. of *Mowtumma*; it attains an elevation of 3000 feet above the level of the plain, and is seen at a considerable distance by vessels approaching the coast; as might have been expected, the *Gulf of Martaban*, with the country in the neighbourhood of the *Sitang* river, were visible from a pagoda placed upon a pinnacle of the mountain, and to which I had ascended on a clear day. Great labour has been expended on this quarter of the *Zingyet Thowng*, with the view of making it more attractive, and rendering the ascent less irksome, than it would naturally have been from the precipitous nature of the rock: steps have been cut into the mountain, and the several projections

* Maulamyeng pagoda.

† The direction is exceedingly variable; it is sometimes N. W. and S. E., making a corresponding difference in the inclination of the strata.

removed or sloped away. A brick wall (about 3 feet high) extends on either side of the road from the foot of the mountain to one-third of its acclivity; this is succeeded by a dry wall, composed of pieces of rock placed loosely together, and continued to the top. The pagoda is small and void of all interior ornament; three handsome bells are attached to the court-yard, one of which bears an inscription, having reference to the period of its fabrication, and the various metallic substances of which it is composed.

Adopting the nomenclature of MACCULLOCH, the rocks under review are of the *primitive* and *secondary* class; all more or less distinctly stratified, and of a highly crystalline or compact nature. The *Zingyet Thowng* is principally composed of *gneiss*, and covered with a forest more or less thick, according to the depth of the soil on which it reposes; in places where the rock approaches the surface divested of vegetable mould, little or nothing is seen save a few stunted bushes and patches of parched grass, that had been produced during the rainy season; these become more perceptible as one advances towards the summit, which, with the exception of one particular spot, the site of the pagoda, and terminating in a peak, is either round backed or cristated. The interior of the *gneiss* presents signs of disintegration from constant exposure to the atmosphere; indeed, the rock is in some instances so decayed that it crumbles to pieces in the hand; but for the *stratification*, it might be taken for a species of fine grained *granite*: if I mistake not, *granite* has seldom been found stratified; *gneiss* will therefore be the more appropriate name. It must, however, be observed, that the stratification of the rock is in some places indistinct and irregular, the inclination of the strata being sometimes to the northward, and not unfrequently to the southward, of west. Under this *gneiss* probably repose the quartz-rock granite and mica slate found extending from the sea (in a N. N. W. and S. S. E. direction) towards the *Kyékmi* pagoda. I regret much that it was not in my power to ascertain, by a personal and minute examination, whether such is actually the case; my visit to *Kyékmi* was unfortunately confined to a short walk upon the beach, where these rocks are found lying in the following order; they are all regularly stratified, the several strata of no great thickness, but dipping into the ground at an angle of 75° or 80° ; commencing from the jetty, and advancing by the pagoda to the west, they were observed as follows:

1. *Red iron clay* (the result of decomposed sandstone?), enclosing nodules of *quartz*; this clay is *cellular*, of a ferruginous appearance, and has the property of becoming hard on exposure to the atmosphere.
- Q. Is this the *laterite* of the western peninsula?

2. White *quartz-rock*, alternating with
3. *Argillaceous schist*; blue or yellow, and slightly *talcose*.
4. *Quartz-rock*, white, or pale yellow, and containing a few scales of *mica*.
5. *Talcose-schist* with thin layers of *quartz*, alternating.
6. A white granite with *mica* abundantly disseminated in large yellow scales.
7. Pink, or red, *quartz-rock*.
8. A grey siliceous substance (resembling *chert*), with veins of quartz, and succeeded by
9. *Gneiss*, similar to that of *Zingyet*, but more decomposed, from the action of the salt water,—this is probably a continuation of the *Zingyet gneiss*.
10. *Red iron clay*; the same as No. 1*.

The above constitute the whole of the *primitive* rocks observed in the neighbourhood of *Maulamyeng*, and with which I am at present so little familiar: the *secondary* rocks, or those now about to be noticed, are of a different character, formed under other circumstances, and at a different epoch.

The first of these, is the *sandstone* of *Mowtumma* and *Maulamyeng*; with little variation in the line of bearing, the inclination of the sandstone strata is diametrically *opposite* to that of the gneiss, quartz-rock, and mica-slate, &c. It has been already shewn, that the strata of the last mentioned rocks dip to the *westward* at a very great angle, whereas the dip of the sandstone strata is generally to the *N. E.*, and the angle of inclination not exceeding 40° or 50°. This sandstone is more frequently white, presenting spotted delineations of a pink or red colour, and is, in some instances, so highly impregnated with *silica*, that it becomes difficult to distinguish it from *quartz-rock*. The less compact portion of the rock is generally intersected by veins of quartz. In many instances, the base of the sandstone is an argillaceous cement, impregnated with oxide of iron, which gives a red colour to the rock, and renders it more liable to decomposition; large masses of this substance are found either alternating with, or resting unconformably upon, the rocks of both classes; in the latter case, transported from its parent rock (the sandstone above noticed), and assuming the appearance of a hard ferruginous breccia†.

The sandstone hills have an undulating appearance, being free from the contortions and asperities peculiar to the limestone rocks in

* See Dr. BENZA'S observations on the filon of hæmatitic iron in the sienitic granite of the Neilgiris, vol. IV. p. 424.—ED.

† This rock is the same as that noticed at Kyékmi, (No. 1.)

their neighbourhood. Attaining a considerable elevation, and running parallel to each other with a distance of some miles between each chain, these mountain ranges form extensive valleys, covered with water during the S. W. monsoon, and devoted for the greater part to the cultivation of paddy; what remains untilled abounding with long grass, the coarser kind serving for house-thatch, and the less rank affording pasture for cattle during the dry season. Except in the immediate neighbourhood of the limestone, where a fine black loam prevails, and on the banks of the rivers and islands formed by the constant accumulation of mud and silt, transported from a clay-slate and limestone country, the greater part of the soil found in the plains contiguous to *Maulamyeng* is an arenaceous clay, mixed with a small portion of saline and vegetable matter*.

The only ore that has been hitherto found in connection with the sandstone is a "*Sulphuret of Antimony*," in a vein of quartz; it is found in the neighbourhood of *Guangdey*, and appears abundant. Leaving *Maulamyeng*, and proceeding to the north, a few limestone hummocks are seen on the right banks of the *Than-lweng* river, forming part of the long but broken chain extending to the south-east via *Joe-ka-beng*, *Damatha*, *Nyown-beng-zeite*, and *Kyema-row*. With an aspect so different from that of the sandstone, these limestone rocks present peculiarities of structure deserving mention; although immediately succeeding the sandstone, the S. W. chains of limestone, or those first seen in contact with it, (advancing to the N. E.,) present little or no signs of stratification. The limestone appears in detached masses, rising, as it were, perpendicularly out of the earth; and as each mass preserves a similar direction with the one preceding it, the range has, at a distance, the semblance of an extensive chain, continually broken and interrupted by some great convulsion in nature. That the sea has covered the whole of this country, and probably at no very distant period of time, is perceptible at the first view. Four distinct epochs would also seem to be marked out. The two first will include the formation of the *primitive* and *secondary* strata; the third, the *up-heaving* of these strata; and the fourth, the presence of the sea upon the whole. The shattered and divided limestone, with its mural precipices and caverns; the saline depositions so constantly met with on the plains, and other appearances of a no less conclusive character, attest the former existence and desolating

* This saline matter is in some places so abundant, that the soil is collected by salt manufacturers for lixiviation; the liquid is strained off, and subjected to the usual process of evaporation.

power of the ocean*. As has been already observed, the sandstone rock is regularly stratified: the dip being (generally) to the N. E., and its angle of inclination from 40° to 50°: on the contrary, the limestone that immediately succeeds it is (to all appearance) unstratified, or the inclination of its strata discernable only from the fissures in the rock, so great, as to merit for it the appellation of *vertical*. It may, however, be remarked, that this peculiarity of structure is perceptible only in the *Joe-ka-beng* and *Mowmah* chains of limestone; advancing to the N. E., and passing another range of the sandstone before noticed, the stratification becomes more apparent, at the same time, that the line of bearing, dip, and inclination of the strata are exactly similar to the sandstone at *Maulamyeng*.

The general structure of the limestone is *mural*, possessing considerable height but little breadth; the angles of the projecting points are sharp, and as the little vegetation produced is restricted to a few stunted trees and shrubs, the rock has a remarkably rugged appearance.

The height of *Joe-ka-beng*, the most elevated point of the S. W. chain, is probably as much as 2000 feet above the level of the plain; it has a small pagoda on its summit, which on a clear day is visible at a distance of 20 miles; but with this elevation, its greatest average breadth will not be more than 300 feet. The limestone is of a grey or lavender-blue colour, sometimes presenting spotted delineations of white, yellow, ochre yellow, and red; of a fine compact texture, rarely granulated; fracture fine and splintery; faintly translucent on the edges; and frequently intersected by veins of calc-spar, corresponding in every essential point with the English "mountain limestone," or "*secondary limestone*" of Jameson. Another characteristic of this limestone is that it is *cavernous*. The caves are of considerable magnitude, and from their containing (occasionally) inscriptions having reference to the fabrication and sculpture of the several images and temples therein placed, are interesting both to the antiquarian and the geologist. The principal caverns are those at *Yétséy*, *Tyok-hla*, *Joe-ka-beng*, *Damatha*, *Nyown-beng-zeite*, and *Phabia*. Surrounded with jungle, these limestone caverns are not unfrequently tenanted by birds and beasts of prey. A great quantity of bat's dung is collected

* The *average* elevation of the plains above the level of the sea, at *high-water*, will not exceed six feet at the present time, while it is evident, on examination, that the banks contiguous to the sea, and subject to the influence of the tide, have been continually raised by successive depositions, and are still receiving deposits of silt or saline matter on every high rise of tide, or inundation produced by the freshes during the S. W. monsoon.

from the *Tyok-hla* cavern, and used by the natives in the manufacture of saltpetre.

Damatha Cavern, (western entrance,) situated on the left bank of the *Gyeng* river, and about 12 miles distant from *Maulamyeng*.

The mouth of this cavern is almost entirely closed by a brick wall : a small passage on the left affording entrance. It is spacious within, being about 220 feet long, 100 feet broad, and 25 feet high. The singularity attached to the cavern arises from its extending right through the hill, so that entering on the western side, one may pass out through the eastern mouth of the cave. The *stalactites* are numerous ; several are of an immense size, and daily becoming larger from the continual supply of water, impregnated with calcareous matter, percolating through the hill, and giving a new crust to those already formed. *Stalagmites* likewise exist, but are generally much concealed from view by bat's dung, with which the floor of the cavern is covered. As is the case with all the larger description of caverns, that at *Damatha* is crowded with images of *Buddha* in wood and stone ; he is represented in his usual sitting posture ; in some instances, arrayed with the "*glories*," but more frequently without them. The workmanship is very inferior, and little attention seems to have been paid to the polishing of the stone, which is a fine crystalline marble, and naturally well adapted for sculpture. Exposed as these rude monuments of art are to the ravages of a damp atmosphere, as well as to the contamination of birds and beasts of prey, such extra labour would have been but fruitlessly bestowed ; the natural white colour of the marble is either entirely defaced, or it has acquired the crystalline, reticulated appearance peculiar to the stalactite. Fronting the eastern entrance, and placed over the larger *Phyá*, is the following inscription written in the *Thalian* tongue, and specifying (as I am given to understand) the time that had elapsed since the cavern was first consecrated for the reception of the images*. The country was at that period in the hands of the *Péy-go†* government, and as marks of great age are evident throughout the whole of the works contained in the cavern, it is probable that some centuries have gone by since they were executed.

Passing out of the *Damatha* cavern on the eastern side, and following the limestone range to the south, a smaller cave may be observed within a few yards of the summit of the hill, which is in this place about 500 feet above the level of the plain ; the ascent to it is extremely difficult, owing to the precipitous nature of the rock. A

* See note at the end of the paper and the inscription lithographed in Pl. X.—ED.

† Pegu.

large brick and mortar image of *Gautama* guards the entrance of the cavern, which measures 18 by 22 feet, while its average height will be as much as 20 feet. This small cave had been but lately selected by the *Phúngi*, for the better concealment of a quantity of manuscripts written in the *Thalian* or *Burmah* character, and secreted in the upper part of the *Damatha* cavern at a time that the country was invaded by the *Tshán**.

The manuscripts were placed in wooden boxes, elevated upon rafters; many had become perfectly rotten, and others were fast hastening to decay from constant exposure to damp.

It may be remarked, that curiously carved elephant's teeth were at one time to be found in these caverns, along with their less costly companions in wood and stone: these are now exceedingly scarce; the greater number have either crumbled into dust, or divested of the gilding and characteristic features of the *Buddhist* saint, have been exposed for sale in the bazar: some few have met with a better fate, and are probably now adorning the cabinets of the curious†. On a survey of the general devastation that prevails throughout these limestone caverns, it may reasonably be doubted, whether the hand of man has not proved equally destructive with time, and the elements, in obliterating much that had claim to notice by reason of superior antiquity, or novelty of design. The mutilated statues and broken shrines strewn around the caves too well attest the intrusion of other than *Barmah devotees*, and point out the havoc provoked by avarice, a fanatic zeal, or the more reprehensible disregard of what is due to the feelings of a conquered people.

Notwithstanding its exceedingly compact nature, perhaps no rock possesses the property of decomposition and solubility in water to such a degree as the limestone here treated of. Hence the rich plains in its vicinity, and the no less fertile islands continually formed and nourished by the carbonaceous particles transported from a limestone country by the *Than-lweng*, *Gyeng*, and *Attayen*. This tendency to *wear* is particularly manifest at the *Phabowng Thowng*, a limestone hill on the right bank of the *Attayen*, and not far removed from the site of the late town and fort from whence that river derives its name. A cavern may be observed in this rock that has evidently been formed by a mountain torrent, which, coming from the interior, rushes through

* Siamese.

† I was fortunate enough to obtain three of these teeth: they appear to be of an immense age; the ivory of the smallest tooth is completely decayed. I have also some of the manuscripts above alluded to, and reserve the whole for presentation to the Asiatic Society. (See Proc. As. Soc. 6th May.)

it to join its waters with the *Attayen*; with an average elevation of 15 feet above the surface of the water, and a diameter of nine feet, the cavern continues to cover the stream to the distance of 80 yards or more beyond its place of junction with the river. In the dry season, the stream is comparatively tranquil; but in the S. W. monsoon, when it is greatly swelled, and becomes tremendously rapid, it rises to the summit, and by its overwhelming force and the constant attrition of its waters on the limestone rock adds considerably to the dimensions of the cave.

Beyond the *Phabowng Thowng*, and on the right bank of the *Attayen* river, are the *hot-wells*. They are three in number, and about two miles distant from the old town of *Attayen*, of which nothing now remains save a few bricks to point out the site of the wall that surrounded it. A dense jungle of reeds and long grass covers the ground, extending to the *hot-springs* and the limestone rocks in their neighbourhood. The largest of the wells is of a circular form, and apparently deep; its diameter is probably as much as 60 feet. An efflorescence of the salt it contained was perceptible on the brick wall by which it is enclosed; the taste of the salt exceedingly bitter, not unlike that of "*sulphate of magnesia*.*" The spring was in a state of active ebullition, and much steam arose from its surface†; on the immersion of a therm. bulb, the mercury rose to 137° Fahrenheit. The springs evidently contained much rain water collected during the S. W. monsoon, and which, overflowing the banks, is disengaged by means of small rivulets that discharge themselves into the *Attayen*. Within a short distance of the hot-springs, I noticed water that had a dark colour, and a disagreeable fœtid odour, like that of "*sulphuretted hydrogen*;" this water was cold, although contiguous to the hot-springs. Both cocoonut and palmyra trees were numerous on the spot, and did not appear to suffer from their vicinity to the hot-wells; a fine young *pipal* tree grew luxuriantly on the bank of the largest spring: on the contrary, the trees situated near the water supposed to contain "*sulphuretted hydrogen*" were of a diminutive size, and had a sickly appearance.

Advancing beyond *Mowmah*, another or second range of *sandstone* is seen to cross the *Than-lweng* river, and take a similar direction with the limestone on which it reposes; the rock is of the same compact or siliceous nature as that of *Mowtumna* and *Maulamyeng*, but covered, for the greater part, by an upper stratum of red iron clay, accom-

* A bottle of the water, taken from the hot spring, has been presented to the Asiatic Society.

† When visited by me in Dec. 1835, at an early hour in the forenoon.

panied with *steatite*, a mineral not unfrequently found associated with this clay in other parts of the coast. This range is less wooded than the sandstone to the southward, and has the ferruginous appearance peculiar to the soil.

Approaching to the village of "*Hmeebong*," one cannot but be struck with the singular appearance of the limestone rock on the right bank of the *Than-lweng*: the limestone appears, as usual, in large isolated masses; but the form assumed by some of these is remarkably grotesque, at the same time, that the stratification of the limestone is more perceptible at this place than it has hitherto been. The following may be taken as a tolerably correct representation of these rocks, as seen from the neighbourhood of *Hmeebong*. (See fig. 2.)

Still ascending the *Than-lweng*, and passing the island of *Colon* by either channel, the river becomes more rapid, owing to the rise of its bed and the limestone reefs that cross it for several miles to the north; the eastern channel is that generally navigated: its left bank is high and precipitous, abounding with the cellular red iron clay so plentiful at *Maulamyeng* and *Kyékmí*: from its position, the clay appears to have been transported to its present site at a comparatively recent period, and *subsequently* to a change in the course of the *Than-lweng*; for it not only reposes *horizontally* upon the limestone rocks, but is found reclining upon a thick stratum of round pebbles and coarse gravel, in every respect similar to that found in the bed of the river at the conclusion of the rainy season*. This conglomerate is perhaps best viewed at an escarpment of the bank a little beyond *Chamyah*, and the great probability of its containing organic remains merits for it the particular attention of the geologist.

The limestone rock had been hitherto observed in broken but elevated chains on either bank of the *Than-lweng*, and with the exception of the few reefs before alluded to, seldom seen to stretch across and disturb the river in its progress to the south: leaving *Colon Island* and proceeding towards the *Yengbieng Kyowng* the case is far different; the country becomes more mountainous, at the same time that the rocks appear distorted and thrown about in the utmost disorder: it seems as if a chasm had been suddenly formed in the mountains, and a passage thus opened to the *Than-lweng*. Piled upon each other in the utmost confusion, the limestone rocks not only form a wall on either side of the river, narrowing its bed, and thereby adding to the

* This *change of course* might have been *produced* by the sudden deposit of the clay; and which accumulation and deposit can only be accounted for in the same manner as reasons are assigned for the singular appearance of the limestone rocks.

rapidity of the current, but spreading themselves across, obstruct its passage, and render the navigation extremely dangerous at any other time than the N. E. moonsoon. The current of the river is very strong near *Miang* and *Mye-an*, but the principal *rapids* are met with in the neighbourhood of *Towng-bio-myo*: I accompanied Sir J. DICKSON, K. C. B., to this place in March, 1835, and we found it impossible for our boats to proceed further; indeed our return was not effected without considerable risk, owing to the force of the current, and the numerous eddies produced by the inequalities on the bed of the *Than-lweng*, which is in this place extremely deep. Accidents continually occur: a boat once drawn within the vortex of the whirlpool is inevitably lost; both boat and crew are sucked down, and never known to make their appearance on the surface.

At the mouth of the *Yengbieng Kyowng*, a spot rendered peculiarly attractive by the beauty of the surrounding scenery, the limestone is seen gradually passing into *clay-slate*; the limestone has a slaty fracture, becomes earthy, and is of a darker colour; the transition is at length so perfected (to the view) that but for the effervescence produced by the nitric acid, it becomes, in some instances, extremely difficult to detect the presence of the limestone in the argillaceous schist, with which it is intimately blended. At a short distance beyond the *Yeng-bien Kyowng*, a few blocks of a grey *siliceous* rock may be observed at the foot of a hill on the left bank of the *Than-lweng**; the hill is high, of a conical shape, and covered with a thick forest and underwood. *Iron ore* is found in considerable quantities both on the hill, as well as in its vicinity; and small grains of *iron pyrites* are abundantly disseminated in the rock. This is succeeded again by the *slaty limestone*, and finally by the blue *clay-slate* that crosses the river at the *Towng-bio* rapid. Large masses of slate repose on either bank, surrounded by a micaceous sand and pebbles (consisting for the most part of *talcose slate*), brought down from the upper country during the S. W. moonsoon. A *dyke* of *porphyritic felspar* intervenes between the slate strata; the felspar rock is of a deep yellow, and studded throughout with small circular pieces of the same mineral, of a lighter colour. I regret much that I had not leisure to pay a proper degree of attention to the structure of this rock; our party arrived on the ground late in the afternoon, and we left the place early on the following morning; but short as was my stay at the *Towng-bio* rapid, I have often since dwelled in pleasing recollection, on the wild and

* The rock is extremely hard, and slightly impregnated with carbonaceous matter.

majestic scenery so bountifully bestowed by nature on this part of the *Kayeng-dho*.

A desire to become better acquainted with the geology of this part of the world induced me to pay a visit to the *Ayein Kayeng*. The following notes, having reference to the geology of that country, are extracted from my journal, with the view of rendering the description of the rocks before mentioned more complete.

“Leaving my boat at *Mye-an*, and advancing in a N. E. direction towards the village of *Yeng-bien*, a mass of regularly stratified limestone makes its appearance on the left of the road; it forms part of a broken chain extending N. N. W. and S. S. E. The stratification of the limestone is remarkably distinct; the dip of the strata E. N. E.

“Proceeding from thence up a dry nullah, covered with fragments of slate and sandstone, the ascent lay over the blue clay-slate that is first seen reposing on the limestone at the *Towng-bio* rapid. The slate is covered with a forest of fine young male bambus, runs parallel with the limestone, and may be as much as 900-feet above the level of the plain.”

“Bidding adieu to *Yeng-bien*, and advancing in the same direction towards *Mélayo*, *Tigunnéy*, (*Tshangelee*,) and *Bo-thowng*, the rocks are of the same nature as those encountered in route from *Maulamyeng* to *Towng-bio-myó*; viz. limestone, alternating with sandstone and clay-slate; the sandstone becomes extremely compact and siliceous in the neighbourhood of *Bo-thowng*; the limestone presents itself in the usual broken masses of various extent. But the clay-slate of *Bo-thowng* differs in colour from that of *Towng-bio*, being either pink or reddish brown, with a fine silky texture. The route from *Tigunnéy* to *Bo-thowng* is difficult and dangerous from the precipitous nature of the rock which is, at the latter place, as much as 2000 feet above the level of the plain. The ascent is also much impeded by the leaves and clay-slate pebbles profusely scattered about, and leaving little footing for the traveller on a path so inclined. Descending on the eastern side of the hill, the path (if it may be so called) lay over masses of the same pink-coloured slate, watered by a stream that precipitated itself over the rock, and rendered the descent a matter of no small difficulty; after proceeding a hundred yards or more, in that direction, the route lay to the left; a second ascent was here commenced, and passing a few heaps of stratified limestone alternating with the slate, I arrived at that part of the mountain called *Bo-thowng*: silver ore is said to exist in a limestone rock at this place, and judging from the numerous excavations that had been made by those in pursuit of the precious metal, no little labour has been used in the endeavour to discover it.

I had neither time nor opportunity for ascertaining whether silver ore does so exist; pieces of *copper green*, *iron pyrites*, and *lead ore**, deemed useless and cast aside by those in pursuit of silver, were strewed around the place, and for the first time, in this part of the world, I observed *Anthracite* dispersed in thin seams through the limestone rock. The figure of the limestone is not a little singular; emerging from the clay-slate at the upper part of the mountain, and confined to a line of 20 or 30 yards, the strata rise at a considerable angle, attaining an elevation of 90 or 100 feet, so that the exterior form of the limestone is that of a huge block, resting upon the hill, unconnected with any rock of the same class. This structure is common to the limestone throughout the whole of the *Bo-thowng* chain; but notwithstanding its peculiarity of form, the stratification is perfectly distinct; the dip of the strata being to the N. E. or E. N. E. precisely similar to that of the sandstone or clay-slate, with which it alternates."

The above notes were hastily arranged on my return from *Maulamyeng*; my residence at that place was necessarily short, and I am aware that much still remains deserving the attention of those who will possess the leisure and opportunities that I was not fortunate enough to enjoy. The field is stored with much that is valuable to the *Antiquarian*, the *Botanist*, and the lover of *Natural History*. I trust that others will, ere long, lay before the public the treasures it contains.

Note.—The inscription brought by Capt. FOLEY, from the *Damatha* cave, is certainly the most enigmatical that has yet puzzled the antiquarian. I have lithographed it in Plate X., and with the assistance of RATNA PAULA, now furnish a copy in the Roman character:

- Line 1.—sakkarak lí kun, 30—65 nhañ, sakkarak lí kun, 4015061, nhañ, sakkarak kun lí.
- 2.—50—45 nhañ, sakkarak lí kun, 603304 nhañ, sakkarak lí kun, 790 nhañ, sakkarak
- 3.—lí kun, 370 nhañ, sakkarak lí kun, 408—409 nhañ, sakkarak, lí kun, 604—30 nhañ nhañ.
- 4.—sakkarak lí kun, 3096-5-0 nhañ, sakkarak lí kun, 303—50 nhañ, sakkarak lí
- 5.—kun 508309 nhañ, sakkarak lí kun, 306060 nhañ, sakkarak lí kun 60—303—5
- 6.—nhañ sakkarak lí kun, 407—50 nhañ, sakkarak kun lí kun, 6030304, nhañ, sakkarak lí
- 7.—kun 401501 nhañ, sakkarak lí kun, 305602 nhañ, sakkarak lí kun, 503—704 nhañ.

All that can be predicated of this curious text is, that it contains either some profound and unintelligible calculation, or that it is a

* On analysis, it appeared to be an "*arseniate of lead*."

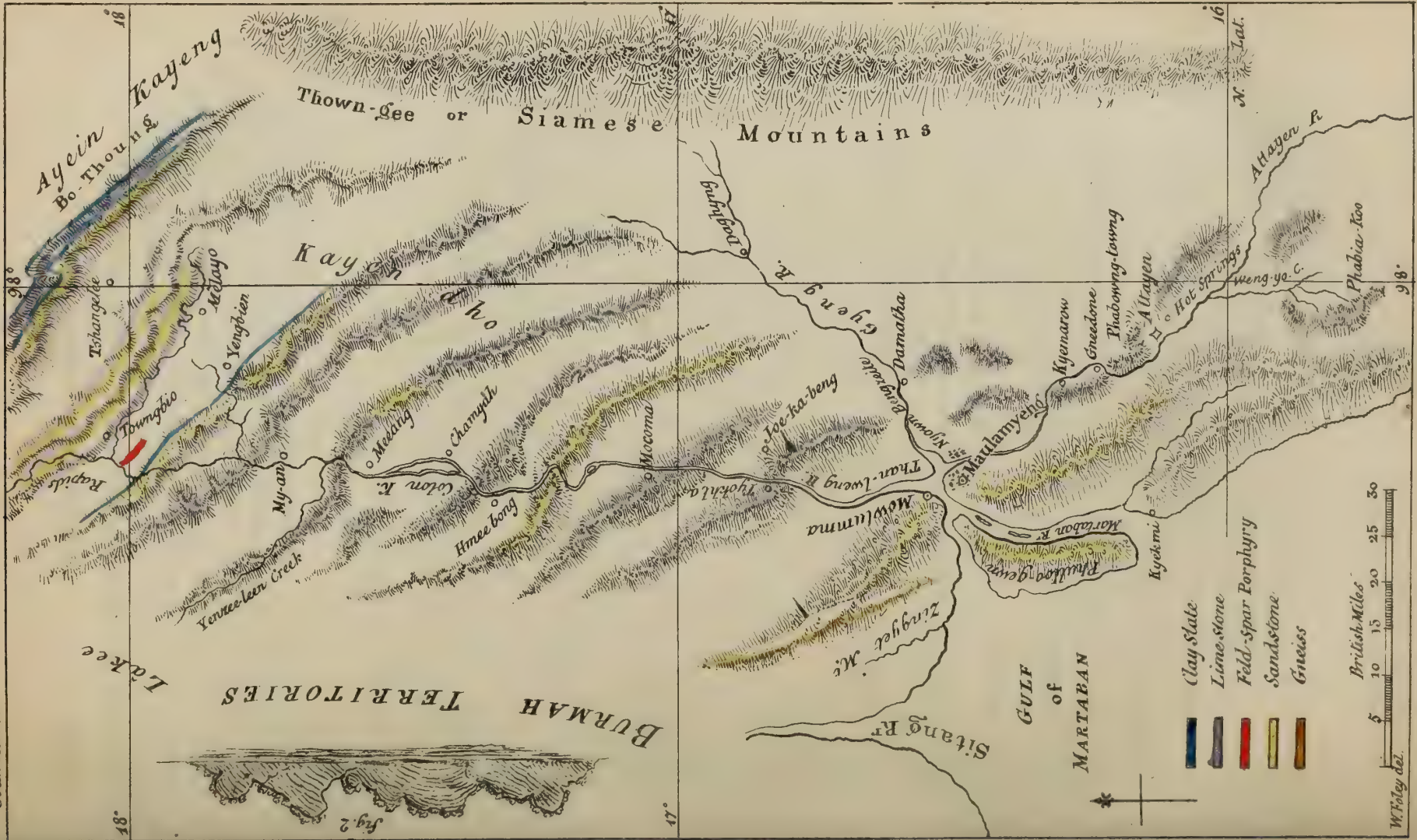


Fig. 2

- Clay Slate
- Limestone
- Feld-spar Porphyry
- Sandstone
- Gneiss

British Miles
 5 10 15 20 25 30

W. Foley del.

J. B. Tallent's Lith. Press.